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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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09/901,917

07/09/2001

Michael A. Walker

11675.101.1.1

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10/23/2002

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EXAMINER

THOMAS, TONIAE M

ART UNIT

PAPER NUMBER

2822

DATE MAILED: 10/23/2002

7

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application N .

09/901,917

Applicant(s)

WALKER ET AL.

Examiner

Toniae M. Thomas

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is an official response to the amendment received on 31 July 2002. The amendment added claims 23 and 24. Currently, claims 1-24 are pending.

Specification

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). The specification does not provide support for the following claimed subject matter: forming a gate oxide on said semiconductor substrate such that the gate oxide has an upper surface that is substantially coplanar with the upper surface of the isolation film

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The specification at page 8, par. [023] does not provide support for the following subject matter: forming a gate oxide on said semiconductor substrate such that the gate oxide has an upper surface that is substantially coplanar with the upper surface of the

isolation film, ^{nor} ~~Not~~ does Figures 6 and 7. Instead, the specification provides support for forming the isolation film within the trench and having an upper surface that is substantially coplanar with the top surface of the substrate, and "growing" a gate oxide on the top surface of the substrate.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. *Claims 1-2, 6, 9, 12-13, 15, 17, 19-20, and 22-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US 5,343,354 B1).*

Claims 1-2, 6, 9, 12-13, 15, 17, 19-20, and 22 are unpatentable over Lee et al. as discussed in the previous Office action. Furthermore, Lee et al. discloses: forming a gate oxide 1 on the semiconductor substrate 100 such that the gate oxide has an upper surface that is substantially coplanar with the upper surface of the isolation film 101 (fig. 4B);¹ forming a storage node SE within the container cell; forming a cell dielectric 20 upon the storage node (fig. 4E); and forming a cell plate PE upon the first gate stack, upon the cell dielectric, and upon the second gate stack, wherein the cell plate has an upper surface that extends into the cell container (fig. 4E).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. *Claims 3, 8, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Wolf (Vol. 2).*

Claims 3, 8, and 18 are unpatentable over the combination of Lee et al. and Wolf as discussed in the previous Office action.

6. *Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Wolf (Vol. 3).*

Claim 7 is unpatentable over the combination of Lee et al. and Wolf as discussed in the previous Office action.

7. *Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Wolf et al. (Vol. 1).*

Claims 10 and 11 are unpatentable over the combination of Lee et al. and Wolf et al. as discussed in the previous Office action.

¹ The isolation film extends slightly above the top surface of the substrate, and is substantially coplanar with the gate oxide 1 grown on the top surface of the substrate.

8. *Claims 4, 5, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Yieh et al. (US 6,114,216).*

Claims 4, 5, and 16 are unpatentable over the combination of Lee et al. and Yieh et al. as discussed in the previous Office action.

9. *Claims 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al.*

Claims 14 and 21 are unpatentable over Lee et al. as discussed in the previous Office action.

Response to Arguments

10. Applicant's arguments filed on 31 July 2002 have been fully considered but they are not persuasive.

The Applicant argues that Lee et al. do not anticipate the gate oxide having an upper surface that is substantially coplanar with the upper surface of the isolation film. However, Lee et al. do anticipate this limitation. As discussed in Footnote No. 1, the isolation film extends slightly above the top surface of the substrate, and is substantially coplanar with the gate oxide 1 grown on the top surface of the substrate.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M. Thomas whose telephone number is (703) 305-7646. The examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (703) 308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JMS

October 21, 2002



Mary Wilczewski
Primary Examiner